

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method of encoding a document image, the method being implemented on a computer and comprising:
 - extracting and encoding one or more picture areas from the document image;
 - extracting ~~[[and]]~~ one or more original characters from the document image;
 - encoding the original characters ~~utilising~~ utilizing a library of templates;
 - generating reconstructed characters from the encoded original characters;
 - obtaining a background image by subtracting the pictures and the reconstructed characters from the document image;
 - encoding the background image; and
 - generating the encoded document image from the encoded pictures, the encoded original characters, and the encoded background image.
2. (Previously presented) The method as claimed in claim 1, wherein character blocks associated with the original characters are classified with reference to dynamically generated templates.
3. (Currently amended) The method as claimed in claim 1 ~~[[or 2,]]~~ wherein the background image is encoded ~~utilising~~ utilizing a SAQ wavelet encoder.
4. (Currently amended) The method as claimed in ~~claims claim~~ claim 1 ~~[[to 3,]]~~ wherein the extracting of the pictures and/or the characters comprises marking blocks partitioned from the document image based on features of wavelet coefficients of the respective blocks.
5. (Currently amended) The method as claimed in ~~claims claim~~ claim 1 ~~[[to 4,]]~~ wherein the extracting of the pictures comprises a hierarchical extraction comprising extracting picture block from the document image to generate one or more initial picture areas and refining the initial picture areas by extracting picture pixels adjacent to the initial picture areas.

6. (Currently amended) The method as claimed in ~~any one of claims~~ claim 1 [[to 5.]] wherein the extracting of the characters from the document image comprises ~~utilising~~ utilizing a ~~customised~~ customized definition of the connectivity of the pixels.

7. (Currently amended) The method as claimed in ~~any one of~~ claim 2, further comprising generating style data as a description of the templates and character blocks.

8. (Previously presented) The method as claimed in claim 7, wherein the classifying the character blocks comprises a hierarchical matching comprising matching the style of each character block based on the style data and then matching each character block against selected ones of the templates based on the style data matching.

9. (Currently amended) The method as claimed in ~~any one of~~ claim 2, wherein the classifying of the character blocks based on the templates comprises morphological matching.

10. (Previously presented) The method as claimed in claim 9, wherein the morphological matching comprises matching algorithms M_1 and M_2 .

11. (Currently amended) The method as claimed in claim 10, wherein different structure elements are ~~utilised~~ utilized for different types of document images.

12. (Currently amended) The method as claimed in ~~any one of claims~~ claim 1 [[to 11]], further comprising bit plane storage of a compressed stream of the document image in the order of character areas, picture area, and background image for progressive decoding.

13. (Currently amended) A method of decoding a compressed document image stream, the method being implemented on a computer and comprising:
extracting and decoding one or more pictures from the compressed document image stream;

extracting and decoding one or more reconstructed characters from the compressed document image stream, wherein the reconstructed characters are reconstructed from encoded original characters in the document image ~~utilising~~ utilizing a library of templates;

extracting and decoding a background image from the compressed data image stream, wherein the background image includes a subtraction of the pictures and the reconstructed characters from the document image; and

reconstructing the decoded document image from the decoded pictures, the decoded reconstructed characters, and the decoded background image.

14. (Currently amended) A computer readable data storage medium having stored thereon code means for instructing a computer to execute a method of encoding a document image, the method comprising:

extracting and encoding one or more pictures from the document image;
extracting one or more original characters from the document image;
encoding the original characters ~~utilising~~ utilizing a library of templates;
generating reconstructed characters from the encoded original characters;
obtaining a background image by subtracting the pictures and the reconstructed characters from the document image;
encoding the background image;
and generating the encoded document image from the encoded pictures, the encoded original characters, and the encoded background image.

15. (Currently amended) A computer readable data storage medium having stored thereon code means for instructing a computer to execute a method of decoding a compressed document image stream, the method comprising:

extracting and decoding one or more pictures from the compressed document image stream;

extracting and decoding one or more encoded reconstructed characters from the compressed document image stream, wherein the reconstructed characters are reconstructed from encoded original characters in the document image ~~utilising~~ utilizing a library of templates;

extracting and decoding a background image from the compressed data image stream, wherein the background image includes a subtraction of the pictures and the reconstructed characters from the document image; and

reconstructing the decoded document image from the pictures, the decoded reconstructed characters, and the decoded background image.

16. (Currently amended) A ~~system computer~~ for encoding a document image, the ~~system computer~~ comprising:

means for extracting and encoding one or more ~~picture~~ pictures from the document image;
means for extracting [[and]] one or more original characters from the document image;
means for encoding the original characters ~~utilising~~ utilizing a library of templates;
means for generating reconstructed characters from the encoded original characters;
means for obtaining a background image by subtracting the pictures and the reconstructed character from the document image, whereby the background image comprises residual image data representing differences between the original characters and the templates;
means for encoding the background image; and
means for generating the encoded document image from the encoded pictures, the encoded original characters, and the encoded background image.

17. (Currently amended) A ~~system computer~~ for decoding a compressed document image stream, the ~~system computer~~ comprising:

means for extracting and decoding one or more pictures from the compressed document image stream;
means for extracting and decoding one or more reconstructed characters from the compressed document image stream, wherein the reconstructed characters are reconstructed from encoded original characters in the document image ~~utilising~~ utilizing a library of templates;
means for extracting and decoding a background image from the compressed data image stream, wherein the background image includes a subtraction of the pictures and the reconstructed characters from the document image; and

means for reconstructing the decoded document image from the decoded pictures, the decoded reconstructed characters, and the decoded background image.